

Hibiscus graniticus Wannan (Malvaceae), a new species from north-east Queensland

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Summary

Wannan, B.S. (2022). *Hibiscus graniticus* Wannan (Malvaceae), a new species from north-east Queensland. *Austrobaileya* 12: 19–25. The new species *Hibiscus graniticus* is described and illustrated. This species has affinities to the geographically widespread *H. meraukensis* Hochr., but differs in features of habit, foliage, flowers, fruit and indumentum. *Hibiscus graniticus* is endemic to granite habitats between Mareeba and Lakeland Downs in north-east Queensland. The new species is illustrated with photographs and notes are provided on how it differs from related species.

Key Words: Malvaceae; *Hibiscus*; *Hibiscus* section *Furcaria*; *Hibiscus graniticus*; *Hibiscus meraukensis*; flora of Australia; flora of Queensland; new species

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Introduction

Hibiscus section *Furcaria* DC. is a speciose group in Australia with more than 30 species described (Wilson 1974; Wilson & Craven 1995; Wilson 2006; Craven *et al.* 2003, 2016; Badry *et al.* 2017). One of the most common and widespread species of the group in Australia is *Hibiscus meraukensis* Hochr., invariably an annual plant. It is also one of the most morphologically diverse members of *Hibiscus* section *Furcaria* with considerable variation in foliage and floral characteristics (Wilson 1974; Ross 1986; Brock 1988; Wheeler 1992; Kenneally *et al.* 1996; Milson 2000; Cooper & Cooper 2004; Moore 2005; Melzer & Plumb 2007; Cowie *et al.* 2013; Hyland *et al.* 2020). *Hibiscus meraukensis* was described from Merauke in New Guinea and considered as related to *H. diversifolius* Jacq. and *H. divaricatus* Graham (Hochreutiner 1907). In a review of Malesian Malvaceae, the distribution of *H. meraukensis* was described as northern Australia (including the Torres Strait Islands), southern New Guinea and the southern Moluccas (Borssum Waalkes 1966).

Hibiscus graniticus Wannan sp. nov. described below, was recognised during fieldwork on southern Cape York Peninsula, as a somewhat glaucous, upright, multistemmed, mauve flowered perennial shrub, growing on elevated granite areas. There are few previous collections of *H. graniticus* in herbaria. These collections have been usually, previously identified as *H. meraukensis* to which the new species is superficially similar.

Materials and methods

Recognition of its morphological differences and the taxonomic novelty of *Hibiscus graniticus* have been confirmed from comparative garden cultivation over the last 10 years at Speewah, alongside examples of *H. meraukensis* from north-east Queensland. The differences have also been confirmed by comparison with over 100 specimens in herbaria of *H. meraukensis* from Western Australia, the Northern Territory and northern Queensland.

The species description and comparisons with other species from *Hibiscus* section *Furcaria* are based on herbarium specimens (BRI, CANB, CNS, NT). Examination of

spirit (author's own collection) and fresh material was used for detailed comparison with *H. meraukensis*. Photographs of the type specimens of *H. meraukensis* lodged at the National Herbarium of the Netherlands (L 0012968, L 0012969, L 0012970, L 0012971, L 0012972) were viewed online (<https://web.archive.org/web/20130125042043/http://vstbol.leidenuniv.nl/>).

Length by width measurements are indicated as length \times width mm. Dimensions are inclusive, i.e. 1.0–1.7 is given as 1–1.7. The terms *climax leaves* and *distal leaves* are used here, *sensu* Craven *et al.* (2003), to describe the larger, mid-stem leaves and upper, smaller leaves subtending flowers, respectively. The term *pedicel* is used here to describe the stalk of a flower; however, in some cases, this is jointed and referred to as an *articulation* in species other than that described below, where it is *inarticulate* (see Table 1). This does not include the frequent abscission layer at the base of the pedicel near the subtending leaf axil.

Taxonomy

Hibiscus graniticus Wannan sp. nov.

Similar to other Australian *Hibiscus* section *Furcaria* but differing by the following combination of characters: perennial multistemmed shrub; glaucous foliage; inarticulate pedicels; absence of stellate or bifid hairs on foliage; presence of only sparse aculei with simple hairs on leaves, epicalyx and calyx and very rarely on stems, petioles and pedicels; ovary with even covering of simple hairs; and seeds light brown with an orange and white caruncle. **Typus:** Australia. Queensland. COOK DISTRICT: Bonny Glen, Cape York Peninsula, 27 October 2010, B.S. Wannan 5990 & M. Trenerry (holo: BRI [AQ880107 comprising a single sheet]; iso: CNS, NSW *distribuendi auctore*).

Shrub to 3 m tall, evergreen, often multistemmed from near ground level; stems up to 4 cm diameter developing light brown bark in older plants. Branchlets grey-glaucous, very rarely with tubercle-based aculei, glabrous. Stipules subulate, unlobed, eventually deciduous, glabrous, 3–6 mm

long on climax leaves, up to 10 mm long on distal leaves subtending flowers. Petioles 15–160 mm long on climax leaves, 0–20 mm on distal leaves, mostly glabrous, very rarely with tubercle-based aculei. Climax leaf lamina (*sensu* Craven *et al.* 2003) ovate to broadly ovate, 60–150 mm \times 60–150 mm, mostly deeply 3–5-lobed with the lobes longer than wide, discolorous, glabrous except for scattered short aculei along midribs on both surfaces; leaf laminae margins serrate, with small aculei (< 0.5 mm) at the apex of each tooth; base mostly cordate. Distal leaves simple, up to 75 \times 20 mm, pinnately-veined; discolorous, glabrous except for scattered short aculei along midribs on both surfaces; leaf laminae margins deeply serrate, with small aculei (< 0.5 mm) at the apex of each tooth; base mostly cuneate. Foliar nectaries 2–4 mm long, present above the midvein junction of climax leaves, one per lobe, or at the base of each pherophyll. Flowers solitary in axils, chasmogamous, lasting only one day. Pedicels 13–22(–40) mm long, inarticulate, glabrous. Epicalyx present, persistent, with occasional tubercle-based aculei to 1.2 mm, 7–9-segments, 14–17 mm long at anthesis, less than 1 mm wide; segments subulate, free to the base, $\frac{3}{4}$ the length of the calyx at anthesis and in fruit, straight or incurved. Calyx at anthesis not splitting, 5-lobed with the lower $\frac{1}{4}$ fused, not adnate to the corolla and not falling with it after anthesis, green, abaxially with tubercle-based aculei to 1.5 mm on midrib and thickened margins, adaxially with very fine simple hairs near lobe margins, lobes triangular with prominent marginal ribs and midrib; apex acute, (16–)19–22 mm long at anthesis, nectary absent. Petals obovate, free to base, 40–80 mm long, pink with maroon basal spots and with simple hairs to 1.5 mm at anthesis, with fine simple hairs to 0.5 mm in bud. Staminal column straight, 5-toothed at the apex, c. 17 mm long, with capitate light maroon pollen clusters to 2 mm, up to the apex of the staminal column. Style c. 27 mm long, extending 10 mm beyond the end of the staminal column, 5-branched each with a capitate stigma that is covered by fine maroon hairs to 0.7 mm. Ovary 10–14 mm long, with simple hairs to 1.5 mm distributed evenly over

ovary. Epicalyx in fruit up to 19 mm. Calyx in fruit not distinctly inflated but slightly longer than epicalyx, up to 28 mm. Fruits capsular, dry-dehiscent, ovoid, 10–14 mm long, hairs simple; dehisced capsules with attenuate apices. Seeds trigonous reniform, up to 4.5 × 3.5 mm, light brown and with an orange and white caruncle. **Figs. 1–8, Table 1.**

Additional selected specimens examined: Queensland. COOK DISTRICT: Near Mount Elephant, NW of Carbine, Apr 2008, *Wannan* 5126 (BRI, CNS); Bobs Lookout on the Desailly Range, Jun 1985, *Clarkson* 5950 (BRI, CANB, CNS, DNA); *Ex horto* Speewah (from *BSW5990*), May 2012, *Wannan* 6426 (CNS); *ibid*, Jun 2017, *Wannan* 6932 (CNS); *ibid*, May 2020, *Wannan* 7043 (CANB, MEL); Footslope of Hann Tableland, Jul 2002, *Fox IDF/640* (BRI); Ridge of Hann Tableland, Jul 2002, *Fox IDF/653* (BRI).

Distribution and habitat: *Hibiscus graniticus* is endemic to the north-east part of the Einalesleigh Uplands bioregion, on the southern Cape York Peninsula in northern Queensland where it grows in eucalypt dominated, open woodland between Mareeba and Lakeland Downs on Desailly, Kelly St George, Cannibal Creek and Mareeba granites (Bultitude *et al.* 1998).

Phenology: *Hibiscus graniticus* is a perennial species that has been recorded to flower mostly between April and August. However, the type collection was made from a specimen found flowering in late November 2010, following 100 mm of rain in early November. Individuals of *H. graniticus* survive for up to 5 years in cultivation, in contrast to the annual growth of *H. meraukensis*.

Notes: *Hibiscus graniticus* differs from examples of *H. meraukensis* from Australia and New Guinea, by its inarticulated pedicels, deeply serrate distal leaves, epicalyx less than 80% of the calyx length at anthesis (vs more or less equal, or slightly longer than calyx at anthesis), absence of stellate hairs, multistemmed perennial habit (vs annual) and hairy ovary and capsule (vs mostly glabrous or sparsely pubescent). *Hibiscus graniticus* further differs from the type specimen and descriptions of *H. meraukensis* from western New Guinea (Borssum Waalkes 1966), by its longer pedicels at anthesis (more than 10 mm long vs. less than 10 mm), longer corolla

(more than 45 mm vs. less than 45 mm), and fawn brown seeds (rather than black-brown). Comparison of *H. graniticus* with other members of *Hibiscus* section *Furcaria* from adjacent areas of northern Queensland is shown in **Table 1**. It differs from all other species of this section in the region by its absence of stellate hairs from all plant parts.

Etymology: The Latin species epithet refers to the granite substrate on which it occurs.



Fig. 1. *Hibiscus graniticus*. Stem showing bark (*Wannan* 6426, CNS). Scale of 20 mm.

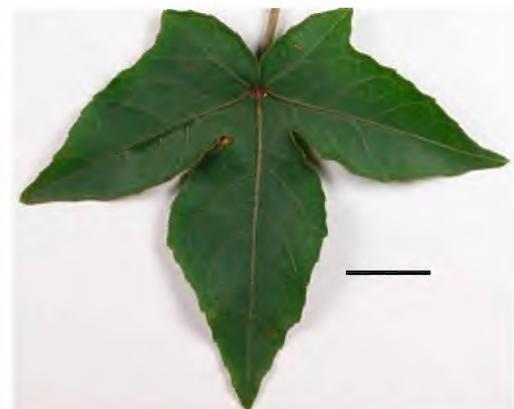


Fig. 2. *Hibiscus graniticus*. Adaxial surface of climax leaf (*Wannan* 7043, CNS). Scale of 20 mm.



Fig. 3. *Hibiscus graniticus*. Abaxial surface of climax leaf with nectaries (Wannan 7043, CNS). Scale of 20 mm.

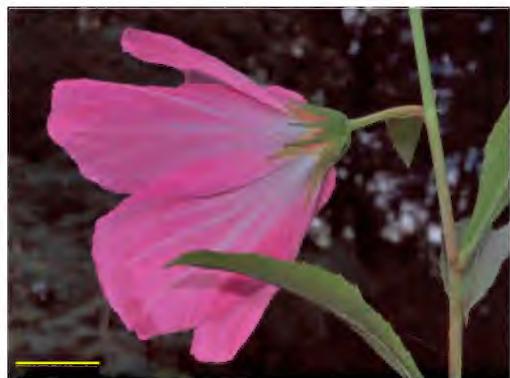


Fig. 6. *Hibiscus graniticus*. Flower showing calyx, epicalyx, pedicel *ex horto* (Wannan 6426, CNS). Scale of 20 mm.



Fig. 4. *Hibiscus graniticus*. Habit with lower climax leaves and flowering shoots with flowers and distal leaves (unvouchered *ex horto* Speewah grown from Wannan 5990, BRI, NSW).



Fig. 7. *Hibiscus graniticus*. Calyx in fruit (Wannan 7043, CNS).

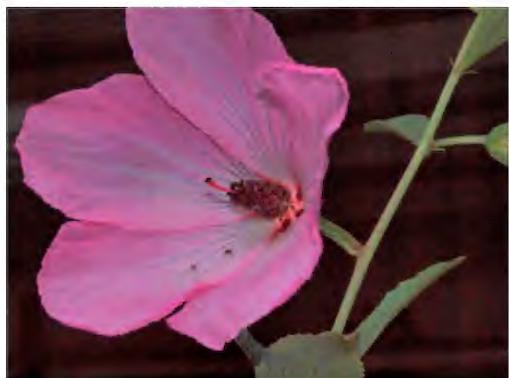


Fig. 5. *Hibiscus graniticus*. Flower showing stamens and ovary as well as stipules *ex horto* (Wannan 6426, CNS).



Fig. 8. *Hibiscus graniticus*. Seeds (Wannan 7043, CNS). Scale of 2 mm.

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Table 1. Characters for species of *Hibiscus* section *Furcaria* from northern Queensland geographically adjacent to the distribution of *H. graniticus*

Notes: CYP – Cape York Peninsula; climax or distal leaves indicated where known.

	<i>H. divaricatus</i> Graham	<i>H. diversifolius</i> sub- sp. <i>ribularis</i> (Bremek. & Oberm.) Exell	<i>H. graniticus</i>	<i>H. heterophyllus</i> Vent.	<i>H. meruensis</i> Hochr.	<i>H. sanguineum</i> Craven	<i>H. splendens</i> C.Fraser ex Graham	<i>H. townsvillen- sis</i> Craven
Distribution	Townsville south to Beerburrum	Atherton Tableland, Tropical Africa	Lakeland Downs to Mareeba	Cairns south to Wollongong	Northern Australia, north from near Biigenden	Pascoe River to McIvor River CYP	Hinchinbrook south to Wollongong	Mount Spec – Townsville area
Habit (metres) and lifespan	2 m shrub, perennial	2 m shrub, perennial	2 m shrub, perennial	Shrub/small tree to 6 m, perennial	0.5–3 m shrub, annual	2–3 m shrub or small tree to 10 m, perennial	Small tree to 7 m, perennial	Tree to 10 m, perennial
Leaf size (mm) and lamina margin dentation	Distal leaves 90–105 × 15–35, serrate	1, 3 or 5-lobed, 30–170 × 25–170, serrate	Climax leaves 3–(5)-lobed, 60–150 × 60–150; distal leaves 75 × 20, all serrate	Trilobed or simple, 140–200 × 40–180, serrulate	Climax leaves 3-lobed, 40–180 × 40–180; distal leaves simple, all serrate	Simple (rarely 3-lobed), 90–190 × 45–180, serrate	Climax leaves 3–5 lobed, 180 × 150, serrulae; distal leaves 70–100 × 30–80	Simple or 3-lobed, 170–260 × 90–150 serrate
Petiole length (mm)	12	3–112	Climax leaves 15–160; distal leaves 0–20	5–30 mm	2–90	40–95	10–130	65–90
Nectary on leaves	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Pedicels Articulate	No	Yes	No	No	Yes	No	Yes	No
Pedicel length (mm)	2–20	2–8	13–22(–40)	6–30	5–42 ¹	15–38	20–50	45–60
Epicalyx segments number	10	8–10	7–9	10	7–10(12)	9–11	11–12	9–13
Epicalyx length (mm)	12–30	4.5–15	14–17 at anthesis; to 19 in fruit	to 15	6–22	17–27	to 25	20–27
Epicalyx shape	Linear flattened	Flattened	Subulate	Linear flattened	Flattened/subulate	Flattened	Subulate	Spathulate/ subulate
Length of epicalyx compared with calyx (epicalyx/calyx)	Less than calyx at anthesis	0.6–0.7 at anthesis	c. 0.75 at anthesis and fruit	Shorter than calyx in fruit	Longer than calyx at anthesis	0.6–1 at anthesis	Slightly less than calyx at anthesis, < 0.5 in fruit	0.6–1 at anthesis

	<i>H. divaricatus</i> Graham	<i>H. diversifolius</i> sub- sp. <i>ribularis</i> (Bremek. & Oberm.) Exell	<i>H. graniticus</i> vent.	<i>H. heterophyllus</i> vent.	<i>H. meruakensis</i> Hochr.	<i>H. sanguineum</i> Craven	<i>H. splendens</i> C. Fraser ex Graham	<i>H. townsvillen- sis</i> Craven
Calyx length (mm)	18–27	10–15 anthesis; to 20 in fruit	16–22 at anthesis; 28 in fruit	14–35	12–20 at anthesis; to 35 in fruit	25–35 at anthesis	to 26 at anthesis; to 45 in fruit	25–35 at anthesis
Nectary on calyx	0	1	0	0	0	0	0	0
Corolla colour	white	maroon	pink	yellow	white/pink	white	pink	white
Corolla size (mm)	55–70	37–57	40–80	60–90	40–65	60–95	60	75–80
Stellate	Branches	Yes	No	Yes	Yes	Yes	Yes	Yes
	Leaves	No	Yes	No	Yes	Yes	Yes	Yes
	Pedicel	Yes	Yes	No	Yes	No/Yes ²	Yes	Yes
Hairs on Epicalyx	No	Yes	No	Yes	No	Yes	Yes	Yes
	Calyx	Yes	Yes	No	Yes	No	Yes	Yes
Capsule indumentum	Hairy	Densely hairy	Hairy	Sparse to densely hairy	Glabrous ³ /sparse pubescent	Densely hairy	Densely hairy	Densely hairy

Characters scored from Borsig Waalkes (1966), Wilson (1974), Ross (1986), Wheeler (1992), Wilson & Craven (1995), Cowie *et al.* (2013), Craven *et al.* (2016), Hyland *et al.* (2020).

¹Recorded as 5–25 mm in New Guinea material (Borsig Waalkes 1966); ²Recorded as present in New Guinea material (Borsig Waalkes 1966); ³Recorded as glabrous capsules in New Guinea material (Borsig Waalkes 1966).